

Novel transport carriers comprising polyalkylimines having two or more hydrophobic groups. These carriers enable the transfer of genes into cells at a high transfer efficiency.

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Fig. 1

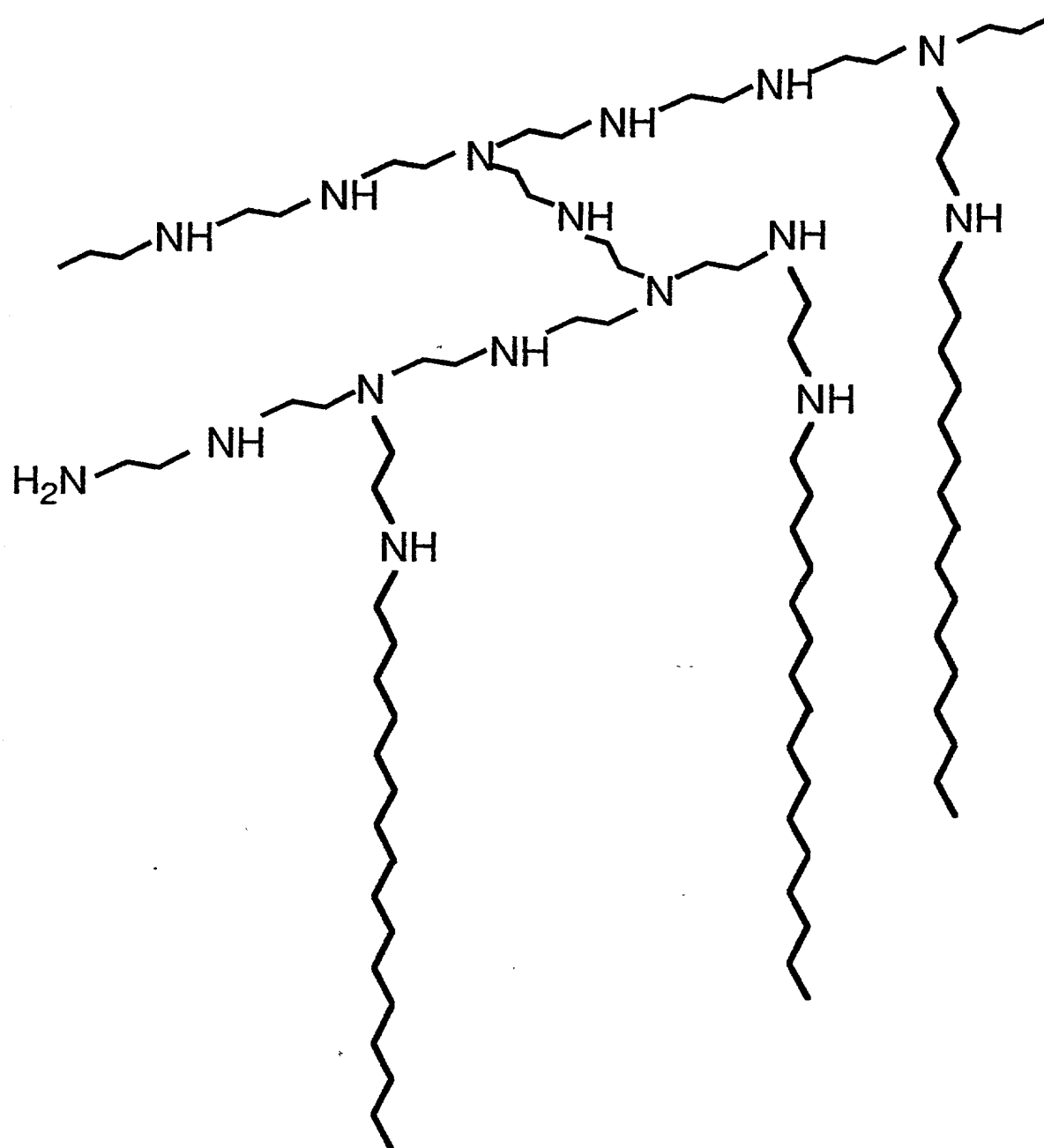


Fig. 2

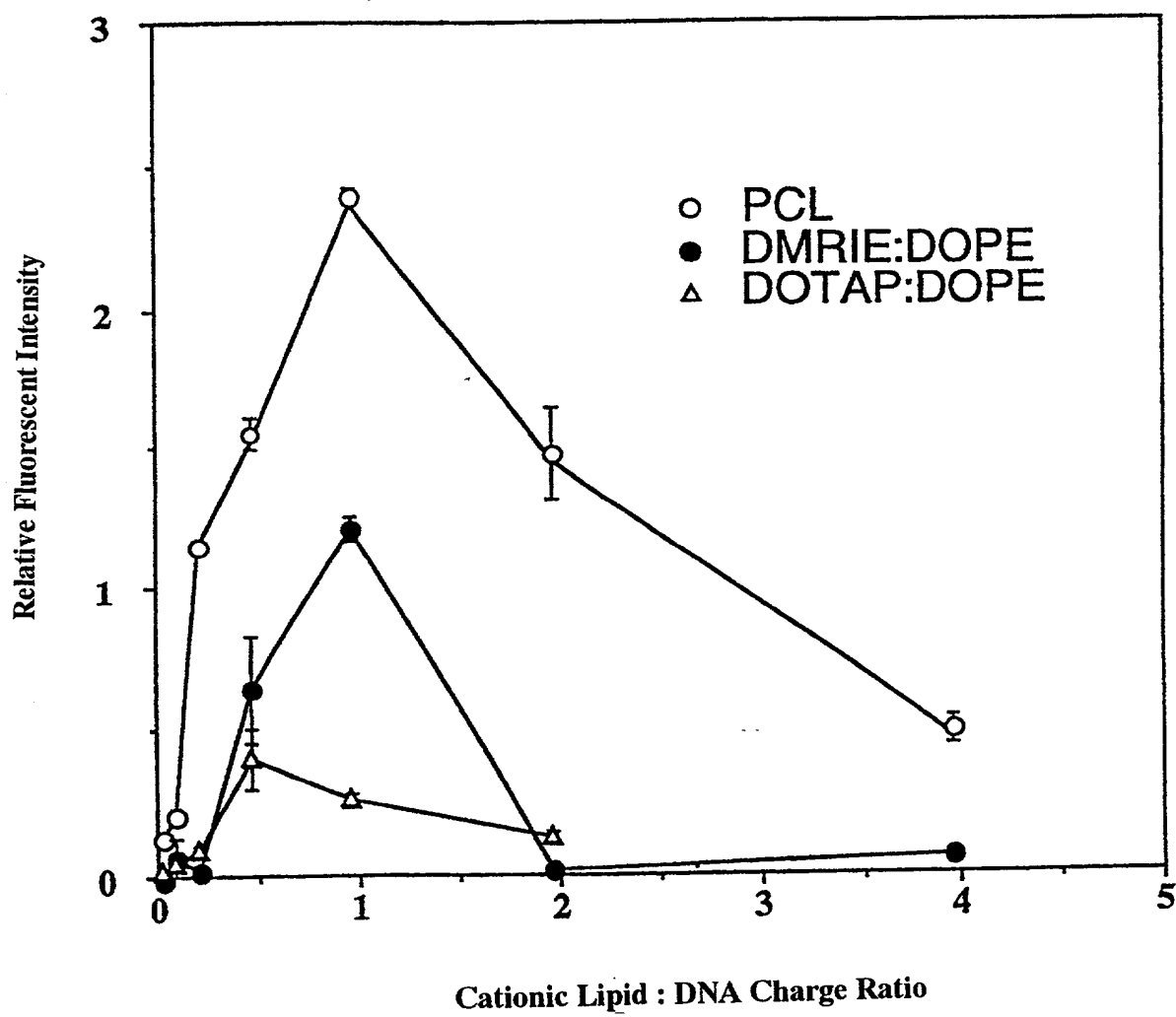


Fig. 3

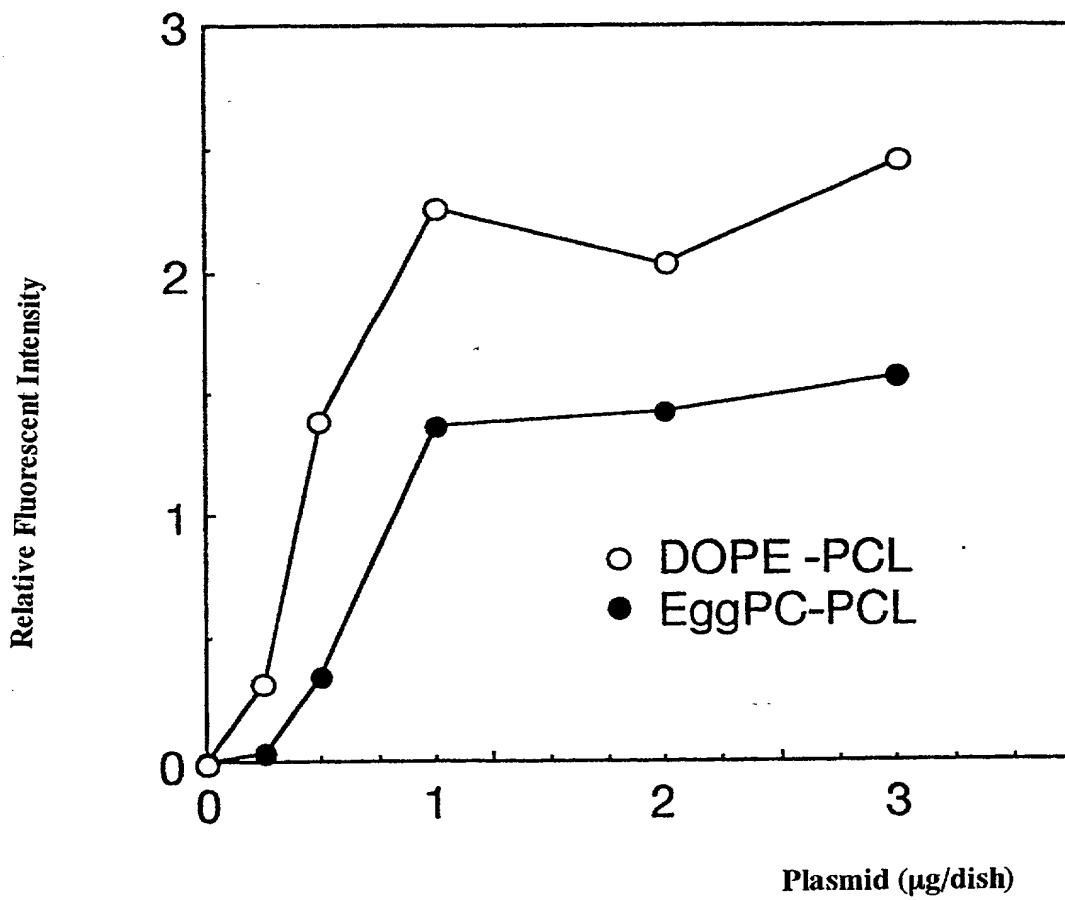


Fig. 4

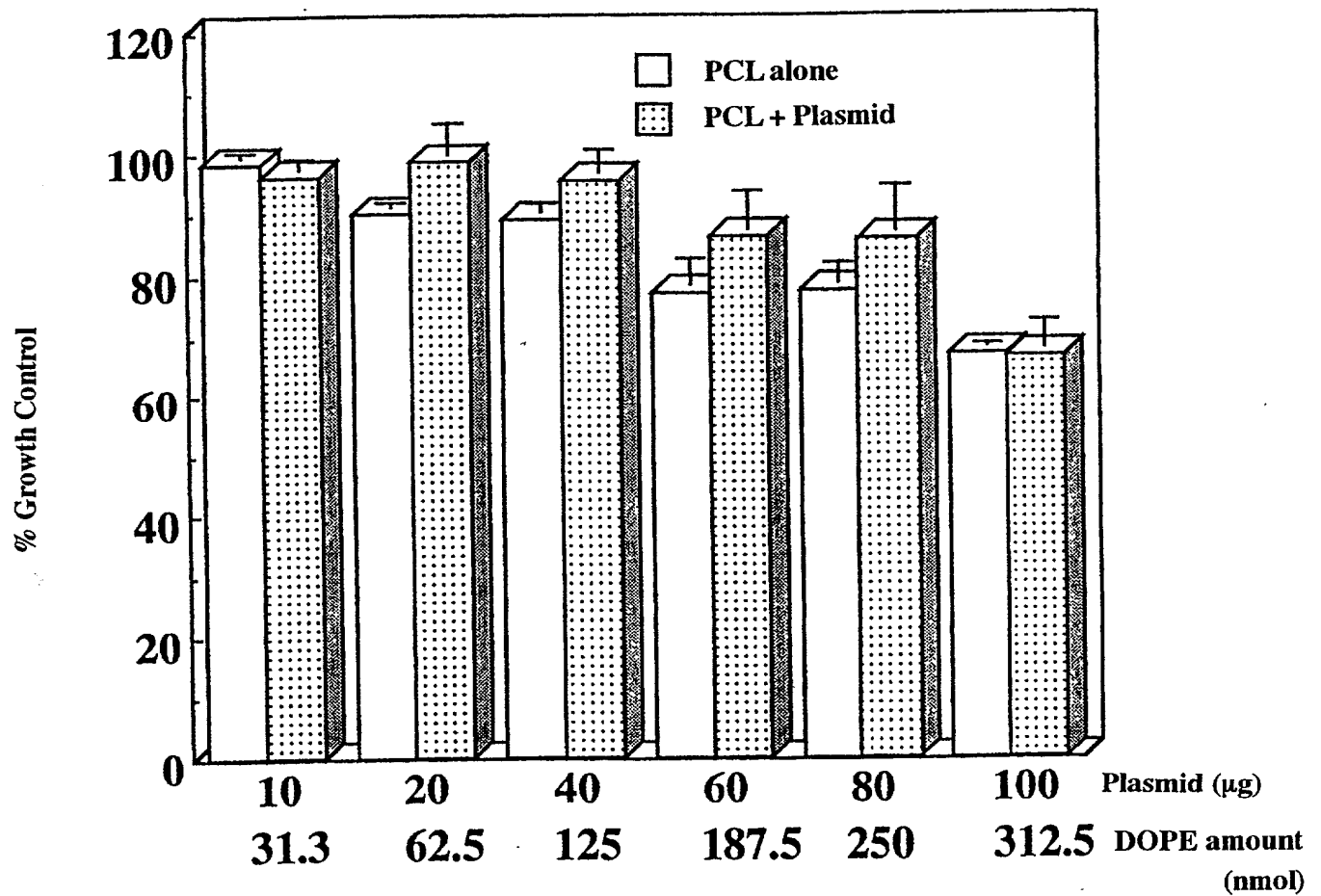


Fig. 5

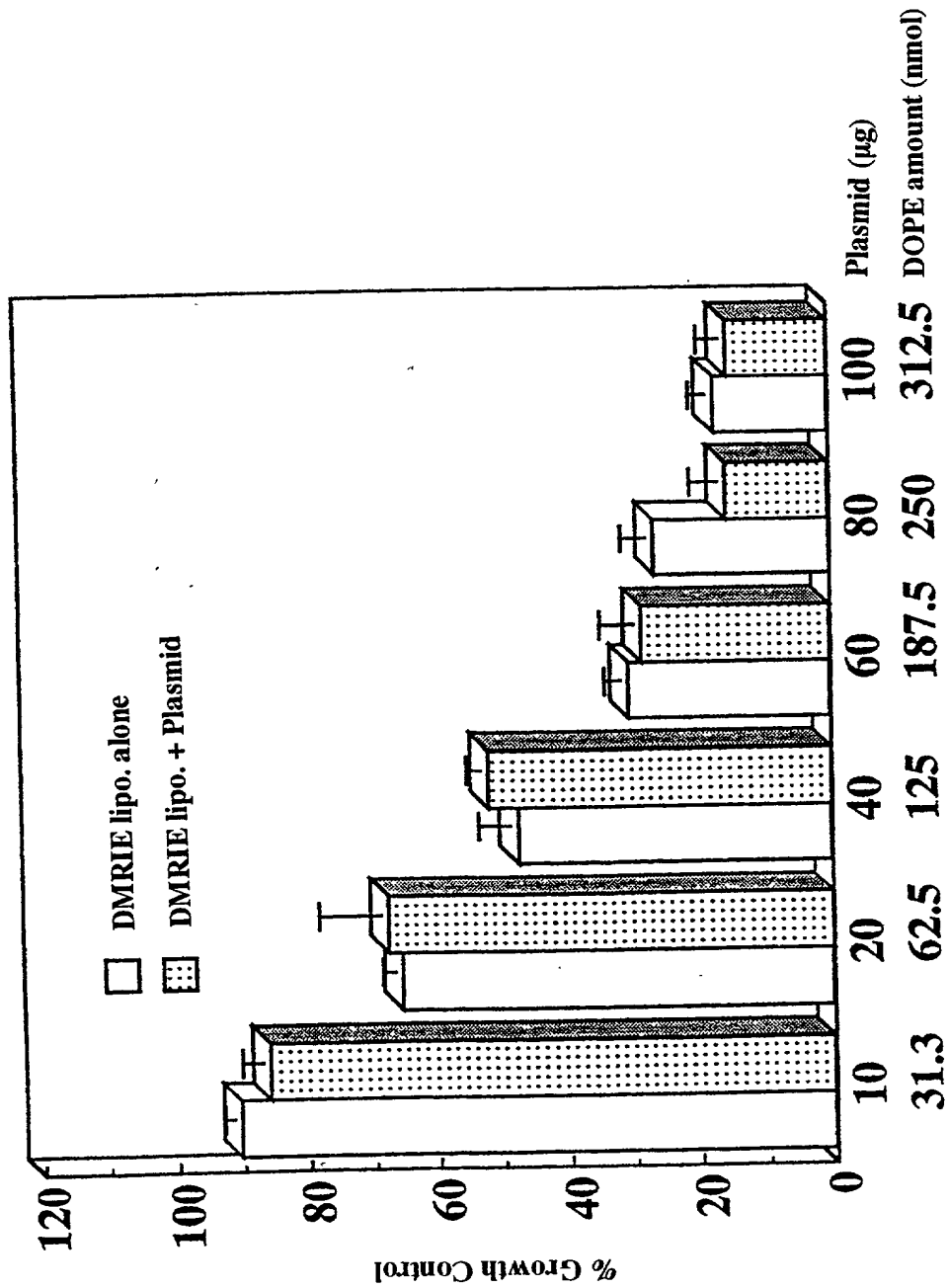


Fig. 6

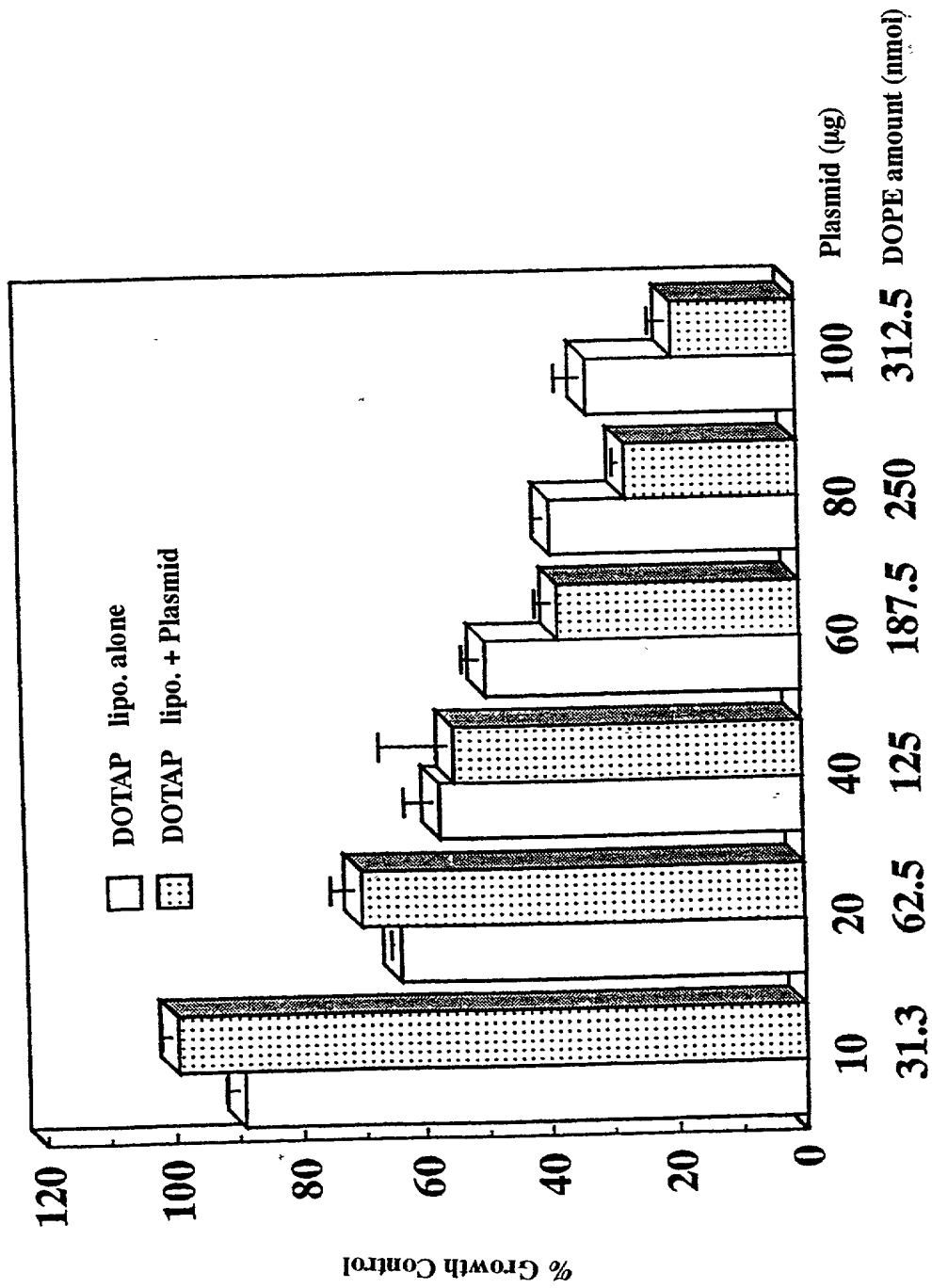
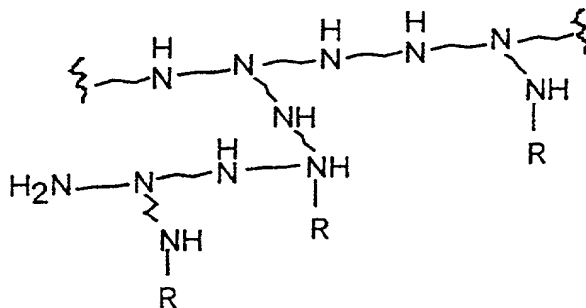


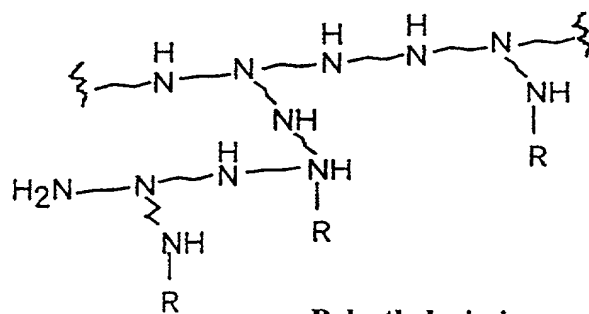
Fig. 7



Polyethylenimine
MW app. 600

Compound Name	Compound No.	R	Rate of alkyl-introduction mol %
P6	1	H	0
P6D20.3	2	C ₁₀ H ₂₁ (Decyl)	20.3
P6L18.4	3	C ₁₂ H ₂₅ (Lauryl)	18.4
P6M18.8	4	C ₁₄ H ₂₉ (Myristyl)	18.8
P6C17.5	5	C ₁₆ H ₃₃ (Cetyl)	17.5
P6C24.5	6	C ₁₆ H ₃₃ (Cetyl)	24.5
P6S21.2	7	C ₁₈ H ₃₇ (Stearyl)	21.2
P6S11.3	8	C ₁₈ H ₃₇ (Stearyl)	11.3

Fig. 8



Polyethylenimine
MW app. 1,800

Compound Name	Compound No.	R	Rate of alkyl-introduction mol %
P18		H	0
P18C12.3	9	C ₁₆ H ₃₃ (Cetyl)	12.3
P18C20.6	10	C ₁₆ H ₃₃ (Cetyl)	20.6

Fig. 9

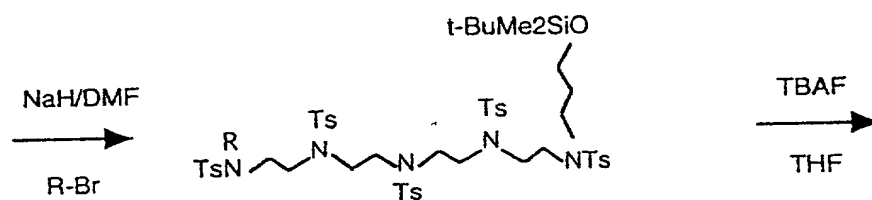
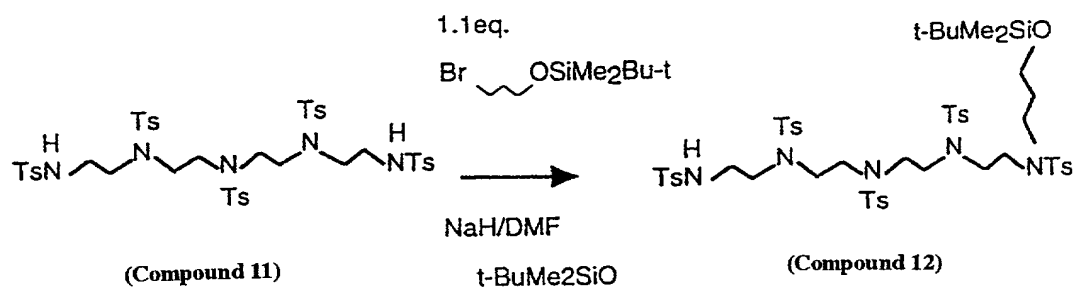
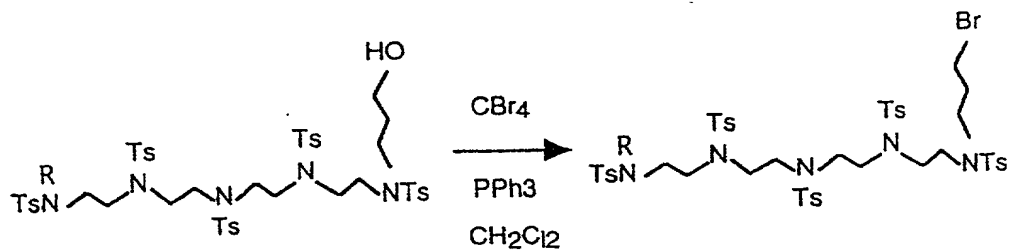
(Compound 13) :R=C₁₆H₃₃(Compound 14) :R=C₁₂H₂₅(Compound 15) :R=C₈H₁₇(Compound 16) :R=C₁₆H₃₃(Compound 17) :R=C₁₂H₂₅(Compound 18) :R=C₈H₁₇(Compound 19) :R=C₁₆H₃₃(Compound 20) :R=C₁₂H₂₅(Compound 21) :R=C₈H₁₇

Fig. 10

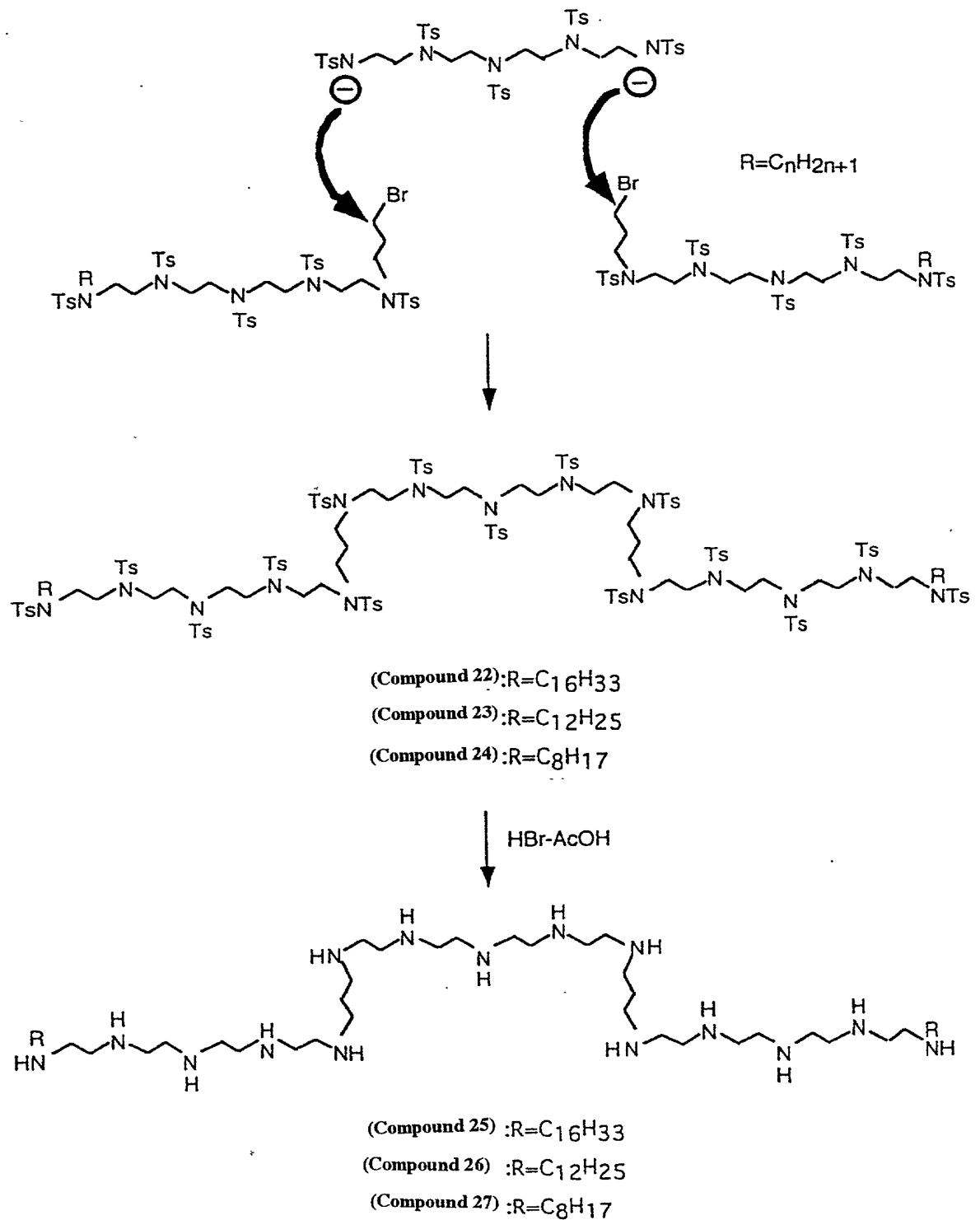
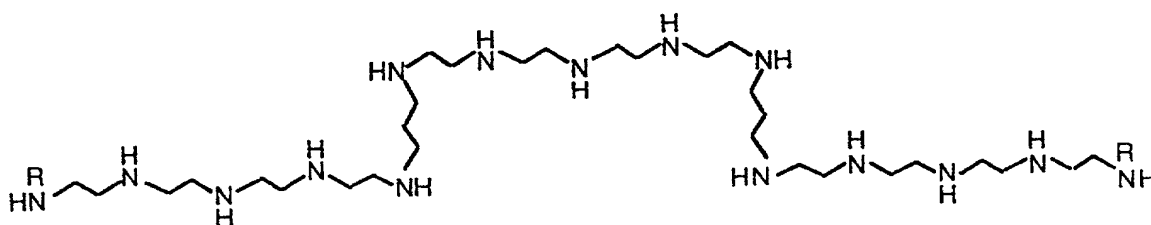


Fig. 11



Compound Name	Compound No.	R
TEL-D16	25	C ₁₆ H ₃₃ (Cetyl)
TEL-D12	26	C ₁₂ H ₂₅ (Lauryl)
TEL-D8	27	C ₈ H ₁₇ (Octyl)

Fig. 12

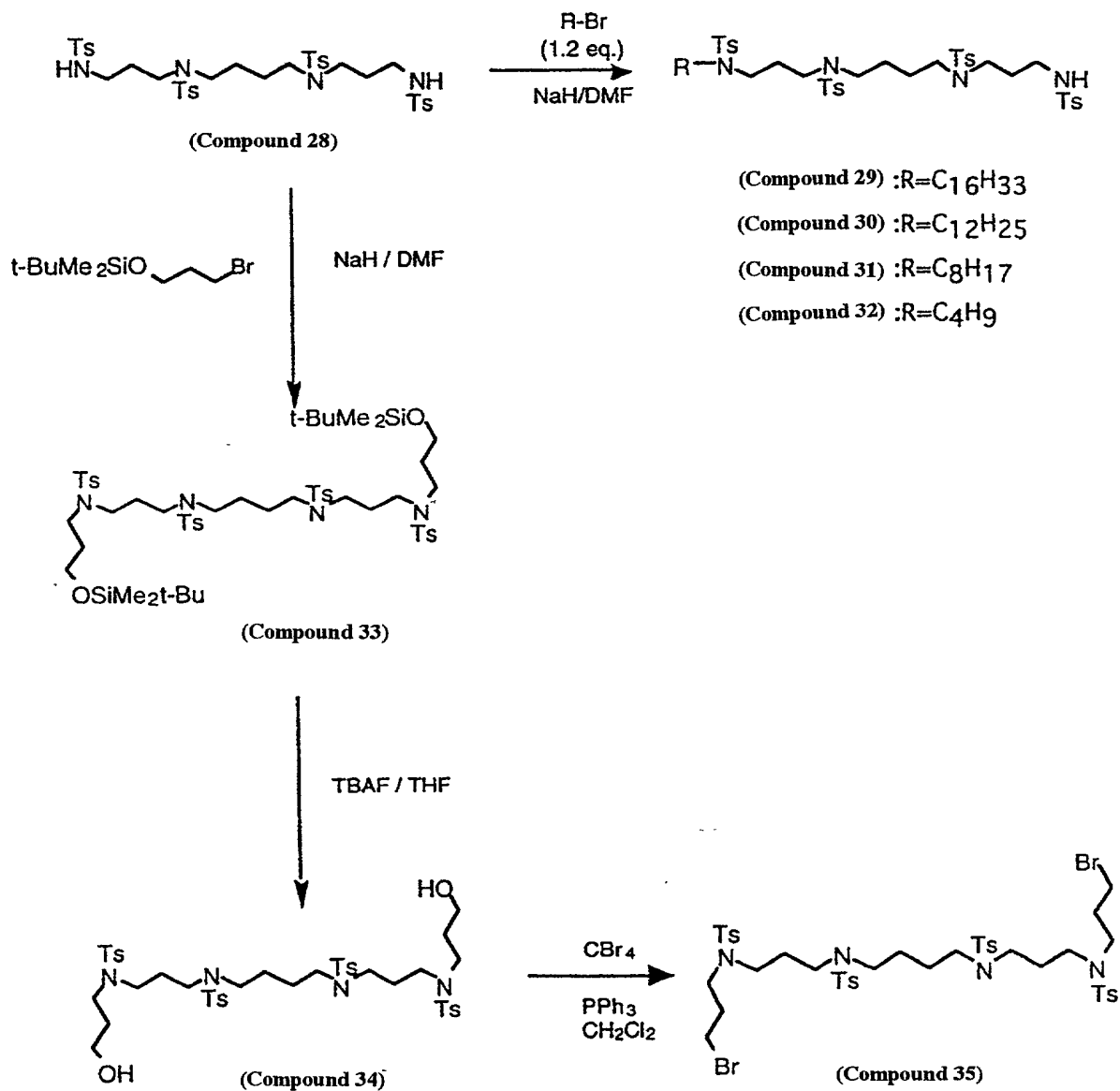


Fig. 13

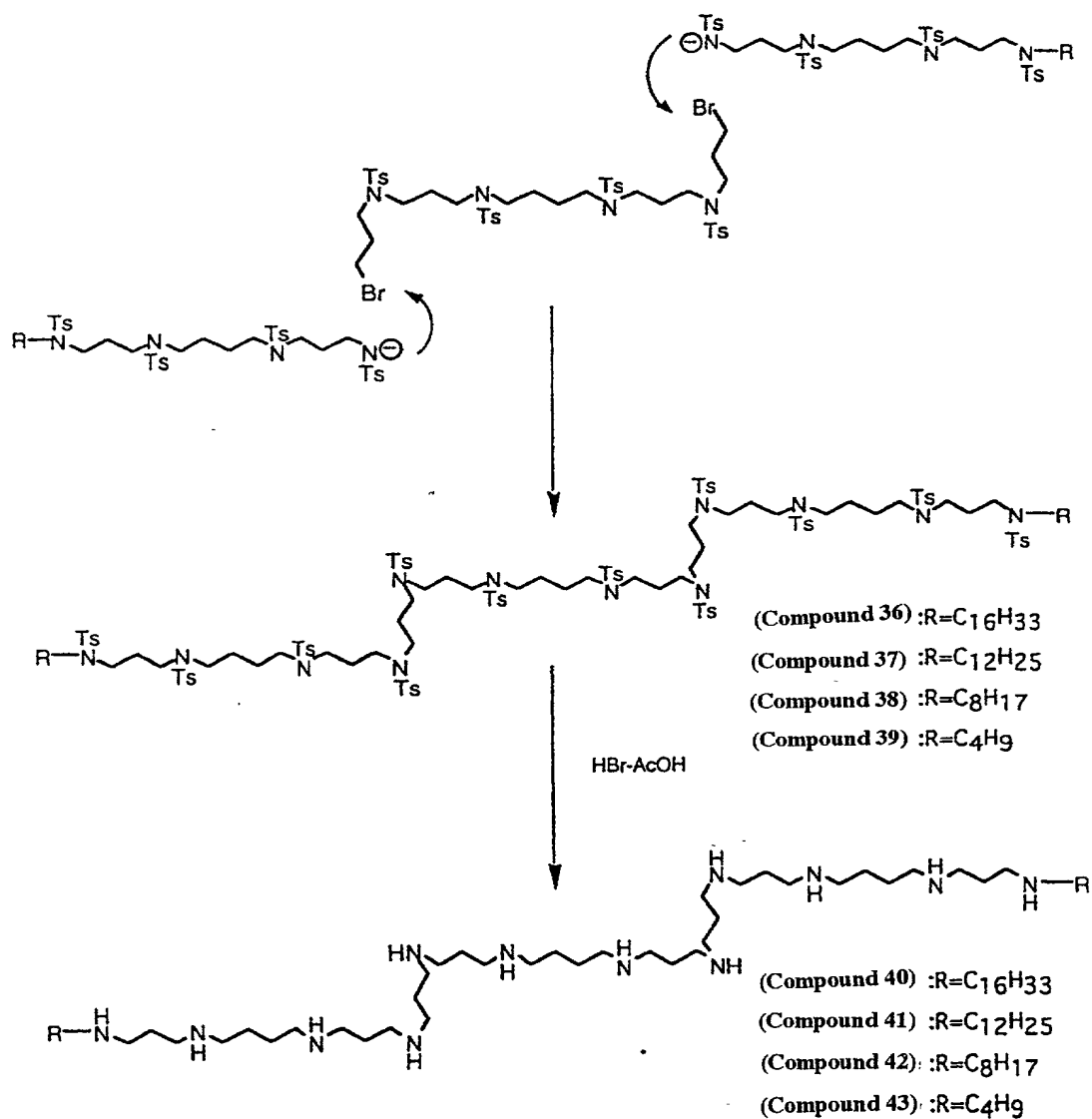


Fig. 14

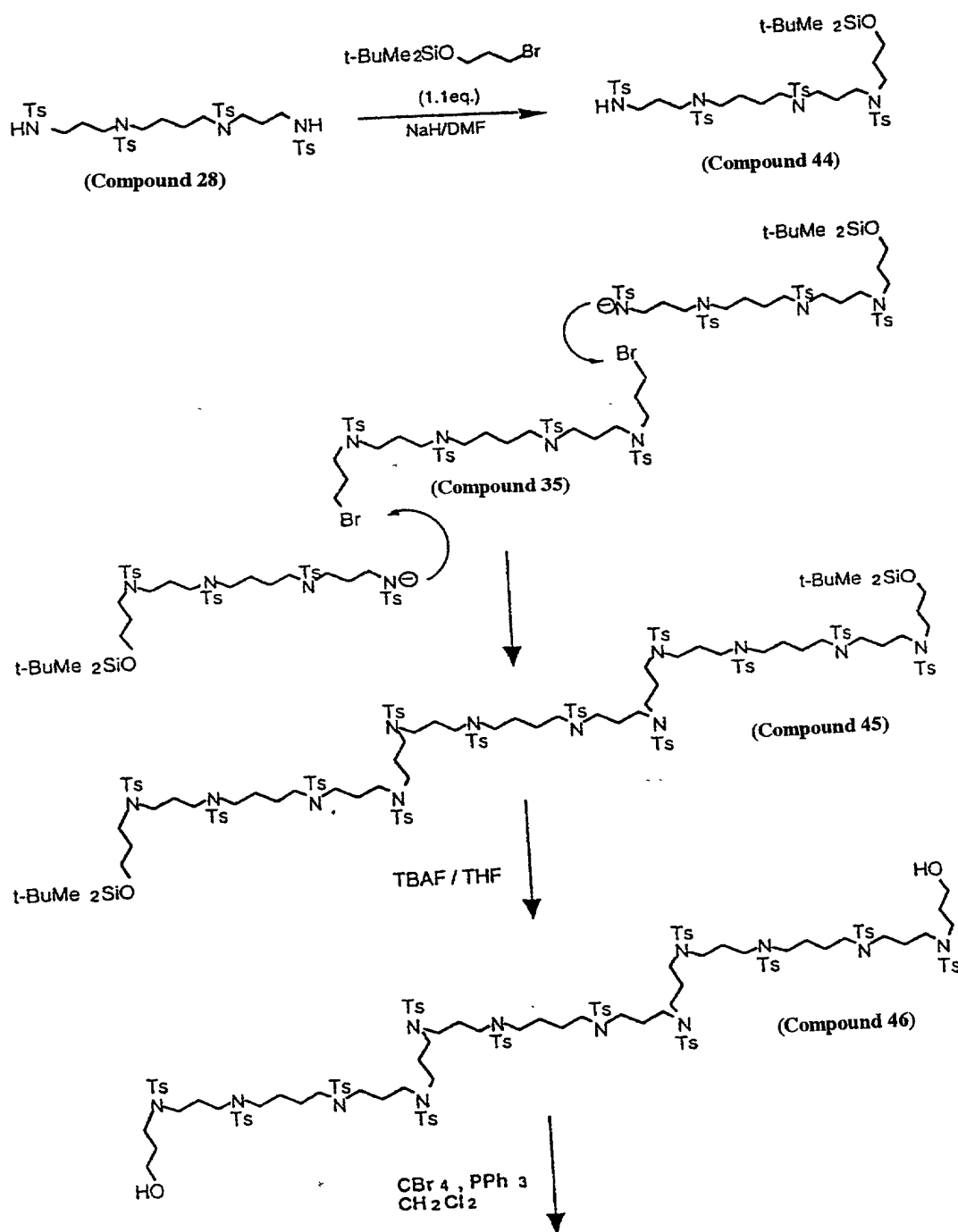


Fig. 15

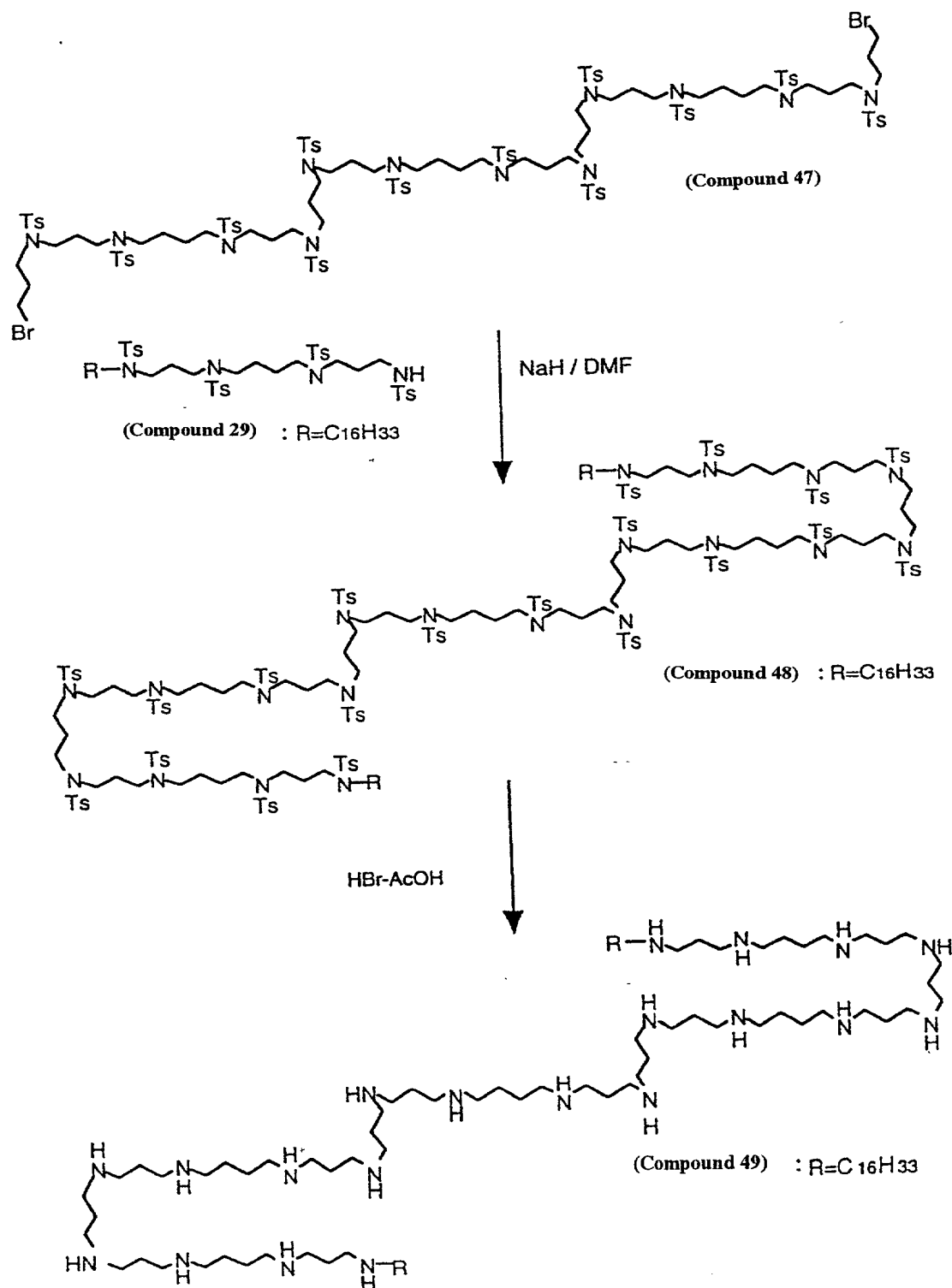
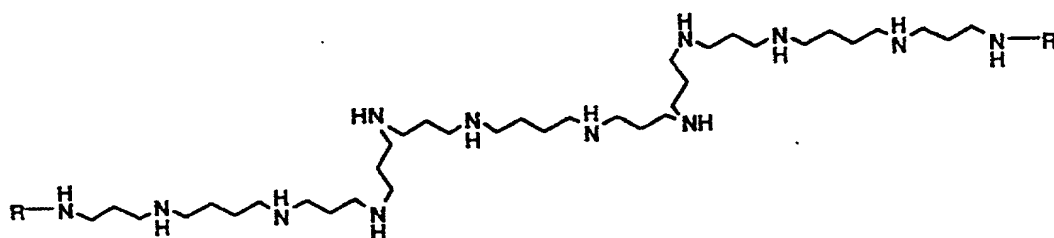
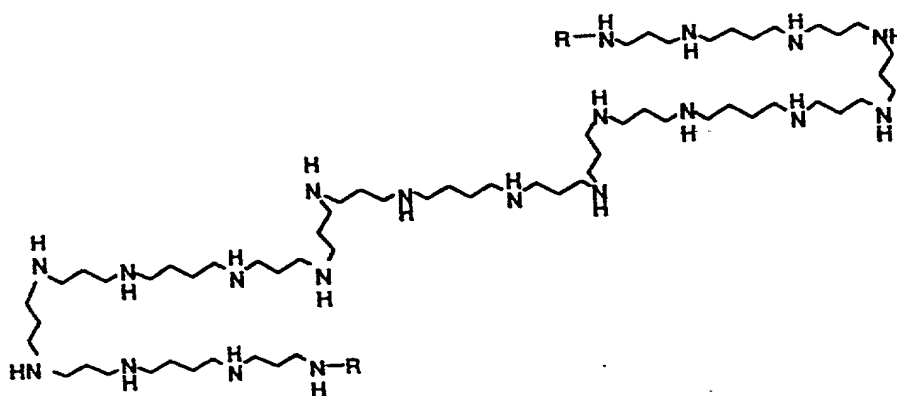


Fig.16



Compound Name	Compound No.	R
TSL-D16	40	C ₁₆ H ₃₃ (Cetyl)
TSL-D12	41	C ₁₂ H ₂₅ (Lauryl)
TSL-D8	42	C ₈ H ₁₇ (Octyl)
TSL-D4	43	C ₄ H ₉ (Butyl)



Compound Name	Compound No.	R
PSL-D16	49	C ₁₆ H ₃₃ (Cetyl)

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled COMPOSITION FOR TRANSPORTING NEGATIVELY CHARGED SUBSTANCES, the specification of which

- ☐ is attached hereto.
☒ was filed on August 28, 2000 as Application Serial No. 09/623,307 ✓
and was amended on _____.
☐ was described and claimed in PCT International Application No. _____
filed on _____ and as amended under PCT Article 19 on _____.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56(a).

FOREIGN PRIORITY RIGHTS: I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

Country	Serial Number	Filing Date	Priority Claimed?
JAPAN	JP 10/48187 ✓	February 27, 1998 ✓	Yes
PCT	JP 99/00954 ✓	February 26, 1999 ✓	Yes

PROVISIONAL PRIORITY RIGHTS: I hereby claim priority benefits under Title 35, United States Code, §119(e) and §120 of any United States provisional patent application(s) listed below filed by an inventor or inventors on the same subject matter as the present application and having a filing date before that of the application(s) of which priority is claimed:

Serial Number	Filing Date	Status

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NON-PROVISIONAL PRIORITY RIGHTS: I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information I know to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Serial Number	Filing Date	Status

I hereby appoint the following attorneys and/or agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Paul T. Clark, Reg. No. 30,162, Karen L. Elbing, Ph.D. Reg. No. 35,238, Kristina Bieker-Brady, Ph.D. Reg. No. 39,109, Susan M. Michaud, Ph.D. Reg. No. 42,885, Mary Rose Scozzafava, Ph.D., Reg. No. 36,268, James D. DeCamp, Ph.D., Reg. No. 43,580, Sean J. Edman, Reg. No. 42,506, Timothy J. Douros, Reg. No. 41,716.

Address all telephone calls to: Paul T. Clark at 617/428-0200.

Address all correspondence to: Paul T. Clark at Clark & Elbing LLP, 176 Federal Street, Boston, MA 02110.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full Name (First, Middle, Last)	Residence Address (City, State, Country)	Post Office Address (Street, City, State, Country)	Citizenship
<u>Naoto Oku</u>	<u>Shimizu-shi, Shizuoka</u> <u>JAPAN JPX</u>	302, Kyousyokuinjyutaku, 21-11, Kawahara-cho Shimizu-shi, Shizuoka 424-0857 JAPAN	JAPAN-
Signature: <u>Naoto Oku</u>			Date: <u>5 March 2001</u>

COMBINED DECLARATION AND POWER OF ATTORNEY

2-00

Full Name (First, Middle, Last)	Residence Address (City, State, Country)	Post Office Address (Street, City, State, Country)	Citizenship
<u>Mamoru Nango</u>	<u>Nagoya-shi, Aichi</u> JAPAN <u>JPX</u>	1-11, Irinakajyutaku, 128-4 Kawanayama-cho Syowa-ku Nagoya-shi, Aichi 466-0827 JAPAN	JAPAN -
Signature: <u>M Nango</u>			Date: <u>March 6</u> 2001

3-00

Full Name (First, Middle, Last)	Residence Address (City, State, Country)	Post Office Address (Street, City, State, Country)	Citizenship
<u>Hideki Miyazaki</u>	<u>Kashiwa-shi, Chiba</u> JAPAN <u>JPX</u>	7-3-205 Akane-cho Kashiwa-shi, Chiba 277-0027 JAPAN	JAPAN -
Signature: <u>Hideki Miyazaki</u>			Date: <u>22 December</u> 2000

4-00

Full Name (First, Middle, Last)	Residence Address (City, State, Country)	Post Office Address (Street, City, State, Country)	Citizenship
<u>Hirovuki Sakakibara</u>	<u>Tsukuba-shi, Ibaraki</u> JAPAN <u>JPX</u>	c/o DNAVEC Research Inc. 25-11 Kannondai 1-chome Tsukuba-shi, Ibaraki 305-0856 JAPAN	JAPAN
Signature: <u>Hirovuki Sakakibara</u>			Date: <u>19th December</u> 2000